

## NEW OR LITTLE KNOWN SPECIES OF APHIDIDÆ.

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**Macrosiphum creelii**, n. sp.*Wingless viviparous female.* (Fig. 10.—Plate II, figs. 1, 2.)

Entire body pea green, excepting the head, which is a whitish green, and a narrow darker green median longitudinal line on dorsum of abdomen. Segments I and II of antenna concolorous with body; segments III, IV and basal half of V brownish, with darker

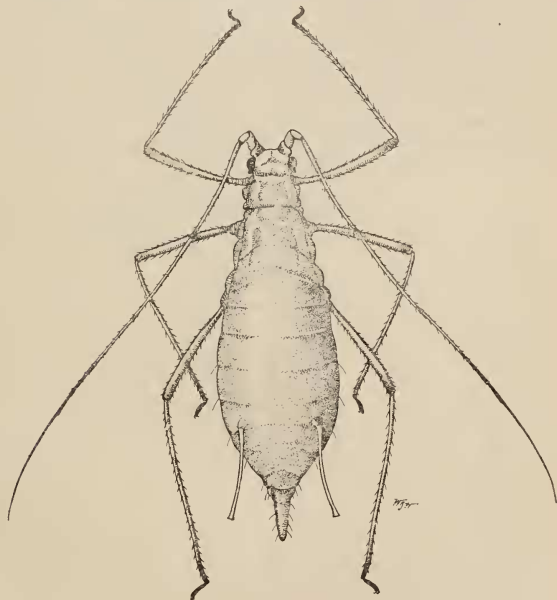


Fig. 10.

tips and the distal half of V and all of VI black; filament of segment VI longest, reaching to or a little beyond tip of body; segment III with 3 to 5 circular sensoria in a row at base, and segments V and base of VI with the usual distal ones. Eyes blood red. Beak barely reaching coxæ of second pair of legs. Legs with femora

pale whitish green with dusky tips, tibiae pale brownish with black tips, and tarsi black; hind tibiae very long, being one-half longer than middle tibiae. Cornicles pale green at basal half, the distal half very pale brownish with blackish tips; reaching a little beyond tip of cauda; narrow and cylindrical, the tip distinctly reticulated. Cauda concolorous with body, ensiform.

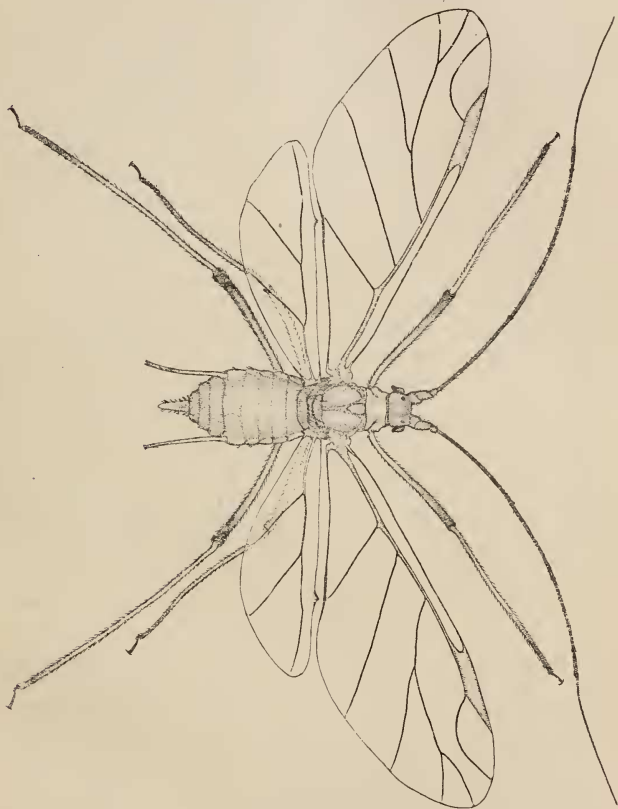
Measurements of living and balsam-mounted specimens as follows: Length of body, not including cauda, 2.6—4.0 mm.,\* average 3.1 mm. (average of living individuals was 3.3 mm.); length to tip of cauda 3.1—4.5 mm., average, 3.6 mm. (average of living individuals, 3.9 mm.); width 1.04—1.93 mm., average 1.26 mm. (average of living individuals, 1.16 mm.); length of cornicles 1.10—1.31 mm., average 1.23 mm.; length of cauda 0.58—0.71 mm., average 0.64 mm.; length of hind tibia 3.1 mm.; length of middle tibia 2.1 mm. Antennal measurements as follows:

## ANTENNAL SEGMENT NO. 1m.

Locality, date, etc	I.	II.	III.	IV.	V.	VI. (base)	VII. (fil't)	Total
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Lovelock, Nevada, May 22, 1911, C. W. Creel.....	0.232	0.135	1.219	0.948	0.852	0.213	1.393	4.992
La Fayette, Ind. (Utah material) Nov. 22, 1912...	.174	.097	1.219	.987	.832	.213	1.451	4.973
La Fayette, Ind.(1) (Utah material) Nov. 22, 1912...	.193	.097	1.219	.948	.813	.232	1.432	4.934
La Fayette, Ind.* (Utah material) Aug. 23, 1912...	.208	.078	1.130	.904	.817	.208	1.234	4.579
La Fayette, Ind. (Utah material), Aug. 23, 1912...	.191	.087	1.130	.956	.800	.208	1.374	4.746
La Fayette, Ind.(1) (Utah material), Aug. 23, 1912...	.208	.087	1.130	.991	.852	.226	1.460	4.954
La Fayette, Ind.(1) (Utah material), Aug. 23, 1912...	.208	.087	1.113	1.026	.869	.226	1.443	4.972
La Fayette, Ind.(1) (Utah material), Aug. 5, 1912....	.174	.097	.987	.987	.755	.213	1.374	4.587
La Fayette, Ind. (Utah material), Aug. 5, 1912....	.174	.097	1.045	.948	.744	.194	1.355	4.587
La Fayette, Ind. (Utah material), Dec. 6, 1911....	.....	.....	1.219	1.064	.929	.251	1.471	.....

(1) Measurements from living specimens.

\*An unusually large specimen collected by Creel in Nevada.

Fig. 11.—*Macrosiphum crechti*, winged viviparous female.

*Winged viviparous female.* Fig. 11.—Plate II, figs. 3, 4.

Head pale greenish yellow. Antennæ black excepting segments I and II, which are pale dusky; filaments of segment VI longest, reaching beyond tip of body; segment III bearing 14 to 21

circular sensoria in a row and usually on basal two-thirds or three-fourths; segments V and base of VI with the usual distal sensoria. Eyes blood red, ocelli brownish. Beak reaching nearly to coxæ of second pair of legs. Thoracic plate yellow or orange yellow. Wings large, with narrow but prominent dark brownish veins, the venation as shown in illustration. Legs with basal half of femora pale green and the distal half becoming dusky to blackish, tibiæ pale brownish with black tips, and tarsi black; hind tibia rather long, being nearly one-half longer than the middle tibia. Abdomen pale green, with a moderately narrow median longitudinal dorsal line of a darker green extending to length of the abdomen; the reddish eyes of the unhatched young often showing through the body wall. Cornicles pale transparent green at basal half, becoming dusky to blackish at the distal end; reaching beyond tip of cauda; cylindrical and rather narrow; the tip distinctly reticulated. Cauda concolorous with abdomen, ensiform.

Measurements of living individuals and specimens in balsam, as follows: Length of body, not including cauda, 2.36—3.56 mm., average 2.72 mm.; length to tip of cauda 2.71—3.83 mm.; average 3.21 mm.; width of body 0.85 to 1.47 mm., average 1.02 mm.; length of wing, average 4.84 mm.; width, average, 1.66 mm.; cornicle, average, 1.75 mm.; cauda, average, 0.46 mm.

Antennal measurements as follows:

ANTENNAL SEGMENT NO. 1m

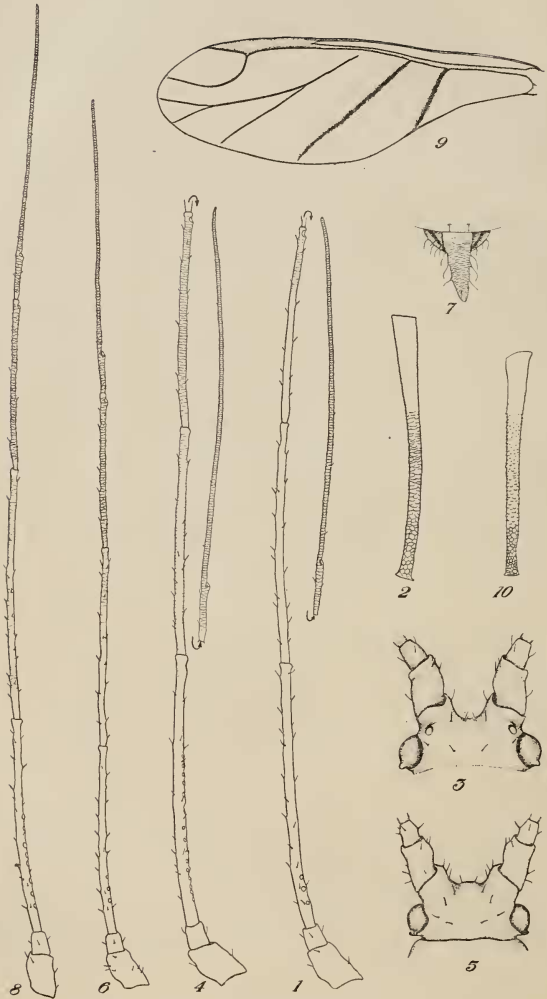
Locality, date, etc	I.	II.	III.	IV.	V.	VI. (base)	VII. (fil't)	Total
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Lovelock, Nevada, May 22, 1911, C. W. Creel.....	0.174	0.097	1.084	0.871	0.774	0.193	1.161	4.354
Lovelock, Nevada, May 22, 1911, C. W. Creel.....	.174	.116	1.045	.890	.793	.232	.....	.....
La Fayette, Ind. (Utah material), Nov. 6, 1912....	.174	.097	1.239	1.122	....	....	....	....
La Fayette, Ind. (Utah material), Nov. 6, 1912....	....	....	1.200	1.103	.832	.213	1.355	....
La Fayette, Ind. (Utah material), Nov. 7, 1912....	.155	.097	1.142	1.006	.832	.232	1.374	4.838

## ANTENNAL SEGMENT NO. 1m.

Locality, date, etc	I.	II.	III.	IV.	V.	VI. (base)	VII. (fil't)	Total
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
La Fayette, Ind. (Utah material), Nov. 7, 1912....	.155	.097	1.161	.968	.813	.213	1.374	4.781
La Fayette, Ind. (Utah material), Nov. 15, 1912....	.174	.097	1.161	1.064	.929	.213	1.548	5.186
La Fayette, Ind. (Utah material), Nov. 15, 1912....	.174	.097	1.161	1.064	.929	....	....	....
La Fayette, Ind. (Utah material), Nov. 15, 1912....	.174	.116	1.084	.903	.871	.290	1.374	4.818
La Fayette, Ind. (Utah material), Nov. 15, 1912....	.174	.116	1.054	.909	.852	.213	1.393	4.711
La Fayette, Ind. (Utah material), Nov. 22, 1912....	.155	.096	.968	.909	.852	.232	1.393	4.605
La Fayette, Ind. (Utah material), Nov. 22, 1912....	.155	.096	.987	.909	.832	.213	1.374	4.566
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.155	.096	1.054	.890	.832	....	....	....
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.155	.096	1.103	.871	.871	.251	1.103	4.450
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.174	.096	1.200	.987	.909	.232	1.471	5.099
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.174	.096	1.200	1.026	.909	.232	1.451	5.098
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.174	.096	.938	.909	.832	.271	1.122	4.342
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.174	.096	1.006	.909	.852	.251	1.122	4.410
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.174	.096	.987	.968	.929	.232	1.471	4.857
La Fayette, Ind. * (Utah material), Dec. 6, 1911....	.174	.096	1.006	1.006	.948	.232	1.509	4.971
†La Fayette, Ind.* (Utah material), Jan. 23, 1913....	.193	.096	1.161	1.064	.929	.232	....	....
†La Fayette, Ind.* (Utah material), Jan. 23, 1913....	.193	.096	1.161	1.045	.890	.232	1.355	4.872

\* On alfalfa in greenhouse.

† Measurements from living specimens.



MACROSIPHUM CREELII AND M. CORYLI.

*Pupa.*

General colour pale green, the head thorax and distal half of abdomen appearing to be scantily pulverulent, giving these parts a slight whitish tint; the rather prominent median longitudinal dorsal line of a darker green colour than that of the body and extending the entire length of the abdomen and thorax. Segments I and II of the antenna whitish green; the remaining segments pale, with a slight brownish tint, excepting the extreme tip of III and IV, the end of V, and all of VI, which portions are blackish. Eyes red. Legs with femora pale green, with an apparently light pulverulence; tibiae of a very faint brownish tint, the tips dark brown; tarsi black. Basal one-half or one-third of cornicle pale green, the remainder with a pale brownish tint, and the tip darker. Cauda concolorous with abdomen.

*Oviparous female.*

In a lot of live specimens received from Mr. G. I. Reeves, November 20, 1911 (collected on alfalfa at Salt Lake City, Utah, November 15, 1911), two wingless females with typical oviparous female characters, namely, swollen hind tibiae bearing numerous sensoria, were found, but upon closer examination one of these was found to be filled with young and no eggs, while the others appeared to contain no eggs and the eye spots of a single young within the body were to be seen. Later on specimens from this lot were reared which proved to be both physiologically and morphologically oviparous, but specimens were not preserved. These females differed from the usual wingless viviparous females by bearing 75 or more small, rather inconspicuous sensoria on the hind tibia and by having 7 to 11 circular sensoria on segment III of antenna.

The eggs are deposited on the foliage of alfalfa and from all observations the aphidid occurs on alfalfa, which is evidently its prime host, the year round.

This large green *Macrosiphum*, which so closely resembles the destructive pea aphid (*Macrosiphum destructor* Johns.) was first received from Mr. Cecil W. Creel of this bureau, who found it very abundant on alfalfa at Fernley and Lovelock, Nev., May 20 and 22, 1911. From reports this species is already a more or less troublesome pest on alfalfa in Utah and Nevada, and may become

as great a pest in the West as the destructive pea aphid is to peas in the East. This aphid has been received from Messrs. G. I. Reeves, T. H. Parks, H. S. Smith, and E. J. Vosler, who collected it on alfalfa at Salt Lake City, Utah. It has also been collected by Mr. J. A. Hyslop on alfalfa at Pullman, Wash., May 25 and 26, and June 4 and 9, 1909.

**Macrosiphum coryli.**

*Wingless viviparous female.* (Fig. 12.—Plate II, figs. 5, 7.)

Head orange-red to brownish. Antennæ black, excepting segments I and II, which are concolorous with head; placed on

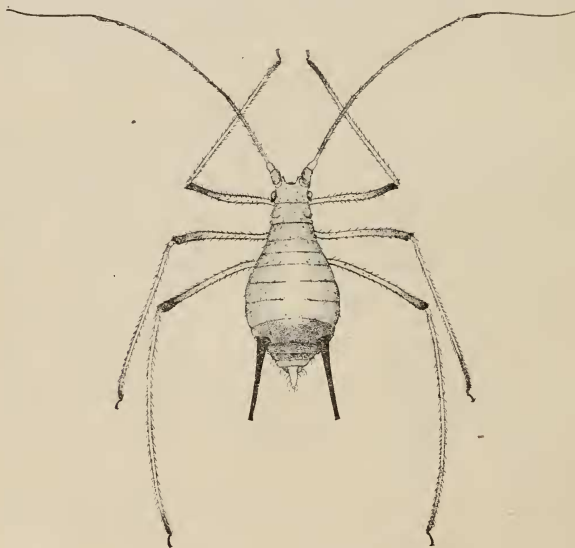


Fig. 12.

conspicuous frontal tubercles; sparsely hairy; very long, being about one-half longer than the body; filament of segment VI the longest; segment III with 3 or 4 circular sensoria in a row near the base; segments V and base of VI with the usual distal sensoria. Eyes dark red to reddish brown. Beak almost wholly black and



reaching to slightly beyond coxæ of third pair of legs. Prothorax concolorous with head; the mesothorax and metathorax brownish, the latter sometimes greenish, especially toward the posterior margin. Legs with femur pale yellowish brown, the tip blackish, tibia pale brown with black tip, and tarsus black; the hind tibiæ very long. Abdomen pale greenish, with a few pinkish dots which indicate the eyes of the embryos within; dusky patches around bases of cornicles; sides of abdomen usually more or less brownish to blackish, although this coloration is sometimes almost wholly wanting; dorsum of the last three abdominal segments usually more or less dusky. Older females have a slight pinkish tint intermixed with the green colour of the abdomen. Cornicles black, cylindrical, the distal fifth strongly reticulated, and very long, reaching the length of the cauda beyond the tip. Cauda pale to whitish green, moderately covered with long hairs, ensiform, and scarcely more than one-third the length of the cornicles.

Measurements from specimens preserved on slides in balsam: Length of body to tip of abdomen 1.74–2.21 mm., average 1.95 mm.; width of body 0.81–1.08 mm., average 0.97 mm.; length of middle tibia 1.80 mm.; length of hind tibia 2.4 mm.; length of tarsus 0.097 mm.; length of cornicle 0.83–1.00 mm., average 0.90 mm.; length of cauda 0.30 mm. Antennal measurements as follows:

ANTENNAL SEGMENT NO. 1m.

I.	II.	III.	IV.	V.	VI. (base)	VI. (filament)
mm.	mm.	mm.	mm.	mm.	mm.	mm.
.....	.....	0.956	1.061	0.783	0.174	.....
.....	.....	.852	.869	.695	.164	0.931
.....	.....	.852	.939	.695	.164	.982
0.174	0.096	.852	.939	.748	.174	.....
.174	.096	.852	.947	.730	.191	.....
.....	.....	.991	1.104	.748	.174	.....
.....	.....	.956	1.026	.765	.164	.991
.174	.096	.921	.921	.713	.157	1.113
.174	.104	.921	.956	.721	.157	1.165
.157	.096	.765	.800	.643	.157	1.043
.157	.096	.765	.783	.609	.157	1.009

*Winged viviparous female.* (Plate II, figs. 8, 10.)

Head pale to reddish brown, sometimes with a faint greenish tint, especially at the margins. Antennæ brownish to black, excepting segments I and II, which are dusky; sparsely hairy; filament of segment VI the longest; total length much more than body length; 9 to 13 (usually 9 to 10) circular sensoria in a row on III and the usual ones on V and base of VI. Eyes dark red. Thorax pale brown. Fore wings with the usual twice-branched media; first anal and cubitus conspicuous and with a prominent border. Legs as in the wingless form. Abdomen pale green, with a blackish ring on the dorsum surrounding each cornicle and a dusky area extending across the dorsum posterior to the cornicles. Cornicles black, cylindrical, gradually tapering toward the apex, which is about one-half the diameter of the base, extending much beyond tip of abdomen, and with the tip reticulated. Cauda pale yellowish green, ensiform, and moderately hirsute.

Measurements from specimens on slides: Length of body 1.62–2.05 mm., average 1.9 mm.; width of body 0.70 to 0.90 mm., average 0.79 mm.; length of fore wing, average, 3.17 mm.; width of fore wing, average, 1.08 mm.; length of middle tibia, average, 1.82 mm.; length of hind tibia, average, 2.34 mm.; length of hind tarsus, average, 0.097 mm.; length of cornicle, average, 0.87 mm.; length of cauda, average, 0.25 mm. Antennal measurements as follows:

## ANTENNAL SEGMENT NO. 1m.

I.	II.	III.	IV.	V.	VI. (base)	VI. (filament)
mm.	mm.	mm.	mm.	mm.	mm.	mm.
0.156	0.087	0.852	0.887	0.678	0.156	1.009
.156	.087	.852	.974	.678	.174	1.009
.156	.096	.904	1.026	.713	.174	.....
.156	.087	.782	.817	.678	.156	.....
.156	.087	.748	.782	.678	.156	.....
.156	.087	.835	.817	.661	.156	1.009
.156	.087	.956	.974	.756	.165	.....
.156	.087	.904	1.026	.782	.174	.....
.156	.087	.782	.819	.696	.174	1.026
.156	.087	.748	.800	.678	.174	1.061

Immature individuals are entirely pale green.

This species lives gregariously on the underside of the leaves and tender terminal shoots of hazel (*Corylus americana*). Described from specimens collected at La Fayette, Ind., July 5, 1912. The writer has also collected this aphidid at Chicago, Ill., May 20 and July 10, 1908.

(To be continued.)

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### WISCONSIN BEES OF THE GENUS PERDITA. GEOGRAPHICAL DISTRIBUTION AND RELATIONS TO FLOWERS.

BY S. GRAENICHER, PUBLIC MUSEUM, MILWAUKEE.

In 1896 Prof. T. D. A. Cockerell<sup>1</sup> published a paper on this genus, containing a vast amount of information, and dealing with the various aspects of taxonomy, variation, distribution, relations to flowers, etc.

The centre of distribution is located in the arid region of the Southwestern United States, New Mexico having an especially large percentage of species in its fauna. Prof. Cockerell states "that in the main we have to do with an austral series of types, which have spread northward and become largely differentiated into species since the glacial epoch." A splitting up into a great variety of forms is evident, and, as Prof. Cockerell puts it, "we have indeed the process of evolution going on under our eyes, the puzzling forms being those which have only lately segregated themselves, and have not yet developed striking peculiarities."

Another characteristic feature of this genus lies in the fact that all of the species, so far as their habits are known, are oligotropic, i.e., most of them depend for their pollen-supply on a single species of flower, and those that collect pollen from a number of plant species, favour closely related forms, belonging either to the same genus, or at least to the same family. New Mexico and Colorado offer extremely favourable opportunities for the study of the close relations between the various forms of *Perdita* and the

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1. Proc. Acad. Nat. Soc. Phil., Vol. 48, pp. 25-107. Two years ago the author published "A list of the bees of the genus *Perdita* Smith" in *Psyche*, Vol. 18, pp. 134-143 (1911).